INDEX

BATCHELOR, G. K. and GILL, A. E. Analysis of the stability of axisymmetric jets, 529

BENNEY, D. J. Non-linear gravity wave interactions, 577

BLOOM, MARTIN H. *See* STEIGER

BRETHERTON, F. P. The motion of rigid particles in a shear flow at low Reynolds number, 284

BROOKE BENJAMIN, T. Theory of the vortex breakdown phenomenon, 593

CONCUS, PAUL. Standing capillary-gravity waves of finite amplitude, 568

COX, B. G. On driving a viscous fluid out of a tube, 81

CRIMINALE, W. O. Jr. and KOVASZNAY, L. S. G. The growth of localized disturbances in a laminar boundary layer, 59

DAVEY, A. The growth of Taylor vortices in flow between rotating cylinders, 336

DRAZIN, P. G. and HOWARD, L. N. The instability to long waves of unbounded parallel inviscid flow, 257

GASTER, M. A note on the relation between temporally-increasing and spatially-increasing disturbances in hydrodynamic stability, 222

GEBHART, B. Effects of viscous dissipation in natural convection, 225

GILL, A. E. *See* BATCHELOR

GILL, A. E. On the occurrence of condensations in steady axisymmetric jets, 557

GOLDSMITH, H. L. and MASON, S. G. The movement of single large bubbles in closed vertical tubes, 42

GUPTA, A. S. *See* HOWARD

HANRATTY, THOMAS J. *See* SCHEELE

HARVEY, J. K. Some observations of the vortex breakdown phenomenon, 585

HEAD, M. R. and RECHENBERG, I. The Preston tube as a means of measuring skin friction, 1

HELLIWELL, J. B. Gas-ionizing shock and combustion waves in magnetogasdynamics, 405

HO, D. V. and MEYER, R. E. Climb of a bore on a beach. Part 1. Uniform beach slope, 305

HOWARD, L. N. *See* DRAZIN

HOWARD, LOUIS N. and GUPTA, A. S. On the hydrodynamic and hydromagnetic stability of swirling flows, 463

KAHN, F. D. Transverse plasma waves and their instability, 321

KHOSLA, P. K. *See* MURGAI

KOVASZNAY, L. S. G. *See* CRIMINALE

KYNER, W. T. Steady flows near the critical speed, 517

LEWELLEN, W. S. A solution for three-dimensional vortex flows with strong circulation, 420

LIGHTHILL, M. J. Physical interpretation of the mathematical theory of wave generation by wind, 385

MARK, RICHARD M. On shear flow past flat plates, 452

MASON, S. G. *See* GOLDSMITH

MEYER, R. E. *See* HO

MORTON, K. W. Large-amplitude compression waves in an adiabatic two-fluid model of a collision-free plasma, 369

MURGAI, M. P. and KHOSLA, P. K. A study of the combined effect of thermal radiative transfer and a magnetic field on the gravitational convection of an ionized fluid, 433

RECHENBERG, I. *See* HEAD

REYNOLDS, A. J. A note on vortex-tube flows, 18

REYNOLDS, A. J. Observations of a liquid-into-liquid jet, 552

REYNOLDS, A. J. Similarity in swirling wakes and jets, 241

RILEY, N. On the analogy between the transport of vorticity and heat in laminar boundary layers, 399

ROGERS, RUTH H. The effect of viscosity near the cylindrical boundaries of a rotating fluid with a horizontal temperature gradient, 25

SCHEELE, GEORGE F. and HANRATTY, THOMAS J. Effect of natural convection on stability of flow in a vertical pipe, 244

SEGEL, L. A. The non-linear interaction of two disturbances in the thermal convection problem, 97

SEGRÉ, G. and SILBERBERG, A. Behaviour of macroscopic rigid spheres in Poiseuille flow. Part 1. Determination of local concentration by statistical analysis of particle passages through crossed light beams, 115

SEGRÉ, G. and SILBERBERG, A. Behaviour of macroscopic rigid spheres in Poiseuille flow. Part 2. Experimental results and interpretation, 136

SIBULKIN, MERWIN. A note on the bathtub vortex, 21

SILBERBERG, A. *See* SEGRÉ

STEIGER, MARTIN H. and BLOOM, MARTIN H. Three-dimensional viscous wakes, 233

TALWAR, S. P. and TANDON, J. N. Stability of a hard-core fluid jet of small electrical conductivity, 178

TANDON, J. N. *See* TALWAR

URSELL, F. Slender oscillating ships at zero forward speed, 496

VAN DYKE, MILTON. Higher approximations in boundary-layer theory. Part 1. General analysis, 161

VAN DYKE, MILTON. Higher approximations in boundary-layer theory. Part 2. Application to leading edges, 481

WATSON, J. On spatially-growing finite disturbances in plane Poiseuille flow, 211

WILLMARTH, W. W. and WOOLDRIDGE, C. E. Measurements of the fluctuating pressure at the wall beneath a thick turbulent boundary layer, 187

WOOLDRIDGE, C. E. *See* WILLMARTH

REVIEWS

Plasmas and Controlled Fusion, 158

Hypersonic Flow Research, 160

Fundamental Data Obtained from Shock-Tube Experiments, 319

Introduction to Hypersonic Flow, 478

Handbook of Fluid Dynamics, 630

Introduction Mathématique à la Mécanique des Fluids, 631

Le Mécanique des Fluids et la Magnétohydrodynamique, 634

Ludwig Prandtl: Gesammelte Abhandlungen zur angewandten Mechanik, Hydro und Aerodynamik, 635

CONTENTS TO VOLUME 14

PART 1 SEPTEMBER 1962

The Preston tube as a means of measuring skin friction. By M. R. HEAD and I. RECHENBERG *page* 1

A note on vortex-tube flows. By A. J. REYNOLDS 18

A note on the bathtub vortex. By MERWIN SIBULKIN 21

The effect of viscosity near the cylindrical boundaries of a rotating fluid with a horizontal temperature gradient. By RUTH H. ROGERS 25

The movement of single large bubbles in closed vertical tubes. By H. L. GOLDSMITH and S. G. MASON 42

The growth of localized disturbances in a laminar boundary layer. By W. O. CRIMINALE, Jr. and L. S. G. KOVASZNAY 59

On driving a viscous fluid out of a tube. By B. G. COX 81

The non-linear interaction of two disturbances in the thermal convection problem. By L. A. SEGEL 97

Behaviour of macroscopic rigid spheres in Poiseuille flow. Part 1. Determination of local concentration by statistical analysis of particle passages through crossed light beams. By G. SEGRÉ and A. SILBERBERG 115

Behaviour of macroscopic rigid spheres in Poiseuille flow. Part 2. Experimental results and interpretation. By G. SEGRÉ and A. SILBERBERG 136

REVIEWS

Plasmas and Controlled Fusion 158

Hypersonic Flow Research 160

PART 2 OCTOBER 1962

Higher approximations in boundary-layer theory. Part 1. General analysis. By MILTON VAN DYKE 161

Stability of a hard-core fluid jet of small electrical conductivity. By S. P. TALWAR and J. N. TANDON 178

Measurements of the fluctuating pressure at the wall beneath a thick turbulent boundary layer. By W. W. WILLMARTH and C. E. WOOLDRIDGE 187

On spatially-growing finite disturbances in plane Poiseuille flow. By J. WATSON 211

A note on the relation between temporally-increasing and spatially-increasing disturbances in hydrodynamic stability. By M. GASTER 222

Effects of viscous dissipation in natural convection. By B. Gebhart *page* 225

Three-dimensional viscous wakes. By Martin H. Steiger and Martin H. Bloom 233

Similarity in swirling wakes and jets. By A. J. Reynolds 241

Effect of natural convection on stability of flow in a vertical pipe. By George F. Scheele and Thomas J. Hanratty 244

The instability to long waves of unbounded parallel inviscid flow. By P. G. Drazin and L. N. Howard 257

The motion of rigid particles in a shear flow at low Reynolds number. By F. P. Bretherton 284

Climb of a bore on a beach. Part 1. Uniform beach slope. By D. V. Ho and R. E. Meyer 305

Review

Fundamental Data Obtained from Shock-Tube Experiments 319

Part 3 November 1962

Transverse plasma waves and their instability. By F. D. Kahn 321

The growth of Taylor vortices in flow between rotating cylinders. By A. Davey 336

Large-amplitude compression waves in an adiabatic two-fluid model of a collision-free plasma. By K. W. Morton 369

Physical interpretation of the mathematical theory of wave generation by wind. By M. J. Lighthill 385

On the analogy between the transport of vorticity and heat in laminar boundary layers. By N. Riley 399

Gas-ionizing shock and combustion waves in magnetogasdynamics. By J. B. Helliwell 405

A solution for three-dimensional vortex flows with strong circulation. By W. S. Lewellen 420

A study of the combined effect of thermal radiative transfer and a magnetic field on the gravitational convection of an ionized fluid. By M. P. Murgai and P. K. Khosla 433

On shear flow past flat plates. By Richard M. Mark 452

On the hydrodynamic and hydromagnetic stability of swirling flows. By Louis N. Howard and A. S. Gupta 463

Corrigendum 477

Reviews

Introduction to Hypersonic Flow 478

PART 4 DECEMBER 1962

Higher approximations in bounday-layer theory. Part 2. Application to leading edges. By MILTON VAN DYKE *page* 481

Slender oscillating ships at zero forward speed. By F. URSELL 496

Steady flows near the critical speed. By W. T. KYNER 517

Analysis of the stability of axisymmetric jets. By G. K. BATCHELOR and A. E. GILL 529

Observations of a liquid-into-liquid jet. By A. J. REYNOLDS 552

On the occurrence of condensations in steady axisymmetric jets. By A. E. GILL 557

Standing capillary-gravity waves of finite amplitude. By PAUL CONCUS 568

Non-linear gravity wave interactions. By D. J. BENNEY 577

Some observations of the vortex breakdown phenomenon. By J. K. HARVEY 585

Theory of the vortex breakdown phenomenon. By T. BROOKE BENJAMIN 593

REVIEWS

Handbook of Fluid Dynamics 630

Introduction Mathématique à la Mécanique des Fluides 631

La Mécanique des Fluides et la Magnétohydrodynamique 634

Ludwig Prandtl: Gesammelte Abhandlungen zur angewandten Mechanik, Hydro und Aerodynamik 635

INDEX TO VOLUME 14 639